

WHAT IS CLAIMED IS:

1. A changeover valve for use in delivering a gas to a gas mask, the changeover valve comprising:

a first valve inlet tube defining and enclosing a first valve inlet cavity;

a second valve inlet tube defining and enclosing a second valve inlet cavity;

a valve outlet tube defining and enclosing an outlet cavity, the valve outlet tube communicating with the first valve inlet tube and the second valve inlet tube; and

a flap valve actuatable between a first position and a second position;

wherein the second valve inlet cavity and the outlet cavity define a first flow path when the flap valve is in the first position, and the first valve inlet cavity and the outlet cavity define a second flow path when the flap valve is in the second position.

2. The changeover valve of claim 1, wherein the first valve inlet tube, the second valve inlet tube, and the valve outlet tube are coupled in a Y-shaped configuration.

3. The changeover valve of claim 1, wherein the flap valve sealably closes an opening between the first valve inlet cavity and the outlet cavity when the flap valve is in the first position.

4. The changeover valve of claim 1, wherein the flap valve sealably closes an opening between the second valve inlet cavity and the outlet cavity when the flap valve is in the second position.

5. The changeover valve of claim 1, further comprising an actuator to actuate the flap valve between the first position and the second position.

6. The changeover valve of claim 5, wherein the actuator is selected from a group consisting of a pneumatic actuator, an electrical actuator, a mechanical actuator, and a magnetic actuator.

7. An air supply changeover apparatus for use in delivering a gas to a gas mask, the air supply changeover apparatus comprising:

- a first valve inlet tube defining and enclosing a first valve inlet cavity;

- a second valve inlet tube defining and enclosing a second valve inlet cavity;

- a valve outlet tube defining and enclosing an outlet cavity, the valve outlet tube communicating with the first valve inlet tube and the second valve inlet tube;

- a flap valve actuatable between a first position and a second position;

- a fluid inlet configured to receive gas from a gas supply source;

- a breathing regulator communicating with the fluid inlet and to the second valve inlet tube, to receive gas from the fluid inlet and control the delivery of gas into the second valve inlet cavity;

- a filter to filter contaminants from ambient air;

- an air blower to draw ambient air into the filter and to blow filtered air into the first valve inlet cavity; and

- a breathing air outlet communicating with the valve outlet tube, to output either gas from the breathing regulator or filtered air,

wherein the second valve inlet cavity and the outlet cavity define a first flow path when the flap valve is in the first position, and the first valve inlet cavity and the outlet cavity define a second flow path when the flap is in the second position.

8. The air supply changeover apparatus of claim 7, further comprising a battery to supply power to the air blower.

9. The air supply changeover apparatus of claim 7, wherein the flap valve sealably closes an opening between the first valve inlet cavity and the outlet cavity when the flap valve is in the first position.

10. The air supply changeover apparatus of claim 7, wherein the flap valve sealably closes an opening between the second valve inlet cavity and the outlet cavity when the flap valve is in the second position.

11. The air supply changeover apparatus of claim 7, wherein the fluid inlet comprises an adapter configured to allow connection to a supply of gas.

12. The air supply changeover apparatus of claim 7, wherein the breathing regulator reduces the pressure of the gas received from the fluid inlet and outputs reduced pressure gas into the second valve inlet tube.

13. The air supply changeover apparatus of claim 7, wherein the air blower comprises a fan.

14. The air supply changeover apparatus of claim 7, wherein the breathing air outlet includes an adapter configured to allow connection to a gas mask.

15. The air supply changeover apparatus of claim 7, further comprising an actuator to actuate the flap valve between the first position and the second position.

16. A dual air supply breathing apparatus for delivering breathable gas to a user, the dual air supply breathing apparatus comprising:

a changeover valve comprising:

a first valve inlet tube defining and enclosing a first valve inlet cavity,

a second valve inlet tube defining and enclosing a second valve inlet cavity,

a valve outlet tube defining and enclosing an outlet cavity, the valve outlet tube communicating with the first valve inlet tube and the second valve inlet tube,

a flap valve actuatable between a first position and a second position, and wherein the second valve inlet cavity and the outlet cavity define a first flow path when the flap valve is in the first position, and the first valve inlet cavity and the outlet cavity define a second flow path when the flap valve is in the second position;

a tank containing a supply of a compressed gas;

a high-pressure valve to control the flow of gas out of the tank,

a fluid inlet configured to receive gas from the tank;

a breathing regulator communicating with the fluid inlet and to the second valve inlet tube, to receive gas from the fluid inlet and control the delivery of gas into the second valve inlet cavity;

a filter to filter contaminants from ambient air;

an air blower to draw ambient air into the filter and to blow filtered air into the first valve inlet cavity;

a breathing air outlet communicating with the valve outlet tube to output gas; and

a gas mask to receive gas from the breathing air outlet and deliver gas to a user, the gas mask having an input port to receive gas.

17. The dual air supply breathing apparatus of claim 16, wherein the flap valve sealably closes an opening between the first valve inlet cavity and the outlet cavity when the flap valve is in the first position.

18. The dual air supply breathing apparatus of claim 16, wherein the flap valve sealably closes an opening between the second valve inlet cavity and the outlet cavity when the flap valve is in the second position.

19. The dual air supply breathing apparatus of claim 16, further comprising an actuator to actuate the flap valve between the first position and the second position.

20. The dual air supply breathing apparatus of claim 19, wherein the actuator is pneumatically operated.

21. The dual air supply breathing apparatus of claim 19, wherein the actuator comprises a biasing device for biasing the flap valve to the second position.

22. The air supply changeover apparatus of claim 21, wherein the biasing device includes a spring.

23. The dual air supply breathing apparatus of claim 20, wherein compressed gas from the tank is used to operate the actuator to actuate the flap valve into the first position.

24. The dual air supply breathing apparatus of claim 18, wherein the actuator is electrically operated.

25. The dual air supply breathing apparatus of claim 24, further comprising a battery to supply power to the actuator.

26. The dual air supply breathing apparatus of claim 25, wherein the battery also supplies power to the air blower.

27. The dual air supply breathing apparatus of claim 24, further comprising a switch.

28. The dual air supply breathing apparatus of claim 27, wherein engaging the switch causes the actuator to move the flap valve into a second position.

29. The dual air supply breathing apparatus of claim 28, wherein engaging the switch also activates the air blower.

30. The dual air supply breathing apparatus of claim 27, wherein disengaging the switch causes the actuator to move the flap valve into a first position.

31. The dual air supply breathing apparatus of claim 29, wherein disengaging the switch also deactivates the air blower.

32. The dual air supply breathing apparatus of claim 18, further comprising a high-pressure hose communicating with the tank via the high-pressure valve, and also communicating with the fluid inlet, to convey compressed gas from the tank to the fluid inlet.

33. The dual air supply breathing apparatus of claim 18, further comprising a breathing air hose communicating with the breathing air outlet and to the input port of the gas mask, to deliver gas from the breathing air outlet to the gas mask.